Message Text

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C O N F I D E N T I A L STATE 132254

E.O. 11652:ADS-DECLASSIFIED WHEN OPERATING RIGHTS CONTAINED
HEREIN HAVE BEEN GRANTED
TAGS: MILI, OCLR, TGEN, CA
SUBJECT: LOW FREQUENCY (LF) PROPAGATION STUDY

1. THE AIR FORCE DESIRES TO CONDUCT A SERIES OF FLIGHTS
OVER CANADIAN AIRSPACE IN AUGUST 1975, TO MEASURE
PROPAGATION OF LOW FREQUENCY TRANSMISSIONS. A COMMAND
POST AIRCRAFT, AIRBORNE IN THE EUROPEAN THEATER, WOULD
TRANSMIT LF SIGNALS AND A U-2 AIRCRAFT STAGING OUT OF
GOOSE BAY WOULD RECEIVE THESE TRANSMISSIONS SO THAT
EFFECTS ON THE SIGNALS CAN BE OBSERVED AFTER PASSING
OVER THE GREENLAND CONTINENT. THE U-2 AIRCRAFT HAS
BEEN SELECTED BECAUSE OF ITS HIGH ALTITUDE CAPABILITY.

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2. SPECIFICALLY, THE PURPOSE OF THE STUDY IS TO DETERMINE
IF THE TRANSVERSE ELECTRIC (TE) MODE OF PROPAGATION
OFFERS ANY ADVANTAGES FOR LOW FREQUENCY AIR-TO-AIR
COMMUNICATIONS OVER THE CONVENTIONAL TRANSVERSE
MAGNETIC (TM) MODE. THE PROPAGATION OF LOW FREQUENCY

RADIO WAVES IS DEPENDENT UPON HOW WELL THOSE WAVES REFLECT FROM THE EARTH'S SURFACE. THE REFLECTION PROPERTIES OF THE EARTH'S SURFACE IN TURN VARY WITH SURFACE CONDUCTIVITY. TO DATE, MEASUREMENTS HAVE BEEN MADE OVER A GOOD CONDUCTOR, SALT WATER, AND AN

AVERAGE CONDUCTOR, CONTINENTAL US SOIL. MEASUREMENTS NOW NEED TO BE MADE WITH A POOR CONDUCTIVE SURFACE BETWEEN THE TRANSMITTER AND RECEIVER. SINCE THE POOREST CONDUCTIVE SURFACE ON THE EARTH IS THE GREENLAND ICE CAP, IT IS PROPOSED TO LOCATE THE TRANSMISSION SOURCE IN AIRSPACE EAST OF GREENLAND AND THE RECEIVER AIRCRAFT WEST OF GREENLAND ALONG DAVIS STRAIT.

3. THE U-2 RECEIVER AIRCRAFT WOULD BE OPERATED BY THE AIR FORCE FLIGHT TEST CENTER (AFFTC) AND BASED AT EDWARDS AFB, CALIFORNIA. THE AIRCRAFT WOULD STAGE FROM GOOSE AB FOR A TWO WEEK PERIOD REQUIRING FOUR TO SIX MISSIONS. EXACT DATES FOR THE FLIGHTS WOULD DEPEND UPON AVAILABILITY OF THE TRANSMITTER AIRCRAFT DURING THE TWO WEEK PERIOD. A TYPICAL MISSION PROFILE FOR THE U-2 AIRCRAFT WOULD BE TO FLY NORTH OUT OF GOOSE BAY ALONG THE COASTS OF LABRADOR AND BAFFIN ISLAND AS FAR NORTH AS CAPE CHRISTIAN AND THEN RETURN TO GOOSE BAY ALONG THE SAME FLIGHT PATH. BESIDES NORMAL FLIGHT INSTRUMENTATION, THE AIRCRAFT WILL HAVE (A) THREE, LOW FREQUENCY FERRITE LOOP ANTENNAS, (B) FOUR BROAD-BAND (20-50 KHZ) AMPLIFIERS, (C) ONE WIDE BAND (60 KHZ), FOUR TRACK, INSTRUMENTATION TAPE RECORDER TO RECORD THE AMPLIFIED SIGNALS FROM THE ANTENNA, (D) ONE LOW FREQUENCY RECEIVER TO MONITOR THE DATA AS IT IS BEING RECORDED, AND (E) AN INTERFERENCE CANCELLATION SYSTEM TO REDUCE THE AIRCRAFT GENERATED INTERFERENCE TO THE DATA BEING RECEIVED.

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4. IN ADDITION TO THE AIRCRAFT PILOT, OTHER PERSONNEL (NINE MILITARY AND THREE CIVILIAN) WOULD BE TEMPORARILY POSTED AT GOOSE AB TO SUPPORT THE AIRCRAFT AND TO MONITOR TESTING. APPROXIMATELY 300 POUNDS OF ELECTRONIC TEST EQUIPMENT WOULD BE FLOWN IN FOR USE BY THESE PERSONNEL. EQUIPMENT WILL CONSIST OF (A) A PORTABLE OSCILLOSCOPE, (B) A TEST OSCILLATOR, (C) A FREQUENCY COUNTER, (D) A STRIP CHART RECORDER, (E) A TRANSISTOR POWER SUPPLY, AND (F) MAINTENANCE TOOLS AND PARTS.

5. THE RESULTS OF THESE MEASUREMENTS WILL BE UNCLASSIFIED WITHOUT RESTRICTION ON THE RELEASE OF SCIENTIFIC DATA. EQUIPMENT IS NOT CLASSIFIED AND CAN BE SHOWN TO LOCAL OFFICIALS.

6. REQUEST EMBASSY SEEK GOC APPROVAL FOR THE ABOVE DESCRIBED OPERATING RIGHT WITH BEGINNING DATE OF 1 AUGUST

1975, AND PROVISO FOR WEATHER/OPERATIONAL DELAYS WHICH WOULD PERMIT FLIGHTS THROUGH 30 SEPTEMBER 1975. KISSINGER

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<< END OF DOCUMENT >>

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